What is claimed is:

1. A method for depositing a low dielectric constant film, comprising delivering a gas mixture comprising one or more linear, oxygen-free organosilicon compounds, one or more oxygen-free hydrocarbon compounds comprising one ring and one or two carbon-carbon double bonds in the ring, and one or more oxidizing gases to a substrate surface at deposition conditions sufficient to deposit a low dielectric constant film on the substrate surface.

2. The method of claim 1, wherein the one or more linear, oxygen-free organosilicon compounds comprises an alkylsilane.

3. The method of claim 1, wherein the one or more linear, oxygen-free organosilicon compounds comprises a member selected from the group consisting of methylsilane, dimethylsilane, trimethylsilane, tetramethylsilane, ethylsilane, disilanomethane, bis(methylsilano)methane, 1,2-disilanoethane, 1,2-bis(methylsilano)ethane, 2,2-disilanopropane, diethylsilane, propylsilane, vinylmethylsilane, 1,1,2,2-tetramethyldisilane, hexamethyldisilane, 1,1,2,3,3-pentamethyltrisilane, 1,3-bis(methylsilano)propane, 1,2-bis(dimethylsilano)ethane, 1,3-bis(dimethylsilano)propane, and combinations thereof.

4. The method of claim 1, wherein the ring comprises five or six carbon atoms.

5. The method of claim 4, wherein the ring comprises six carbon atoms.

6. The method of claim 1, wherein the one or more oxidizing gases is selected from the group consisting of ozone, oxygen, carbon dioxide, carbon monoxide, water, nitrous oxide, 2,3-butanedione, and combinations thereof.

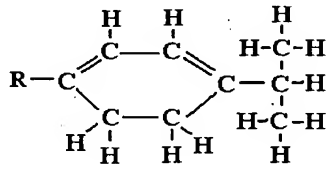
7. The method of claim 7, wherein the one or more oxidizing gases consists of carbon dioxide and oxygen.

8. The method of claim 1, further comprising post-treating the low dielectric constant film.

9. The method of claim 1, wherein the one or more linear, oxygen-free organosilicon compounds comprises trimethylsilane and the one or more oxygen-free hydrocarbon compounds comprises alpha-terpinene.

10. The method of claim 9, wherein the one or more oxidizing gases consists of carbon dioxide and oxygen.

11. A method for depositing a low dielectric constant film, comprising delivering a gas mixture comprising one or more linear, oxygen-free organosilicon compounds, one or more oxygen-free hydrocarbon compounds including the structure:



wherein R is selected from the group consisting of linear alkane groups having one to five carbons, and one or more oxidizing gases to a substrate surface at deposition conditions sufficient to deposit a low dielectric constant film on the substrate surface.

12. The method of claim 11, wherein the one or more oxygen-free hydrocarbon compounds comprises alpha-terpinene.

13. The method of claim 11, wherein the one or more linear, oxygen-free organosilicon compounds comprises a member selected from the group consisting of methylsilane, dimethylsilane, trimethylsilane, tetramethylsilane, ethylsilane, disilanomethane, bis(methylsilano)methane, 1,2-disilanoethane, 1,2-bis(methylsilano)ethane, 2,2-disilanopropane, diethylsilane, propylsilane,

vinylmethylsilane, 1,1,2,2-tetramethyldisilane, hexamethyldisilane, 1,1,2,3,3-pentamethyltrisilane, 1,3-bis(methylsilano)propane, 1,2-bis(dimethylsilano)ethane, 1,3-bis(dimethylsilano)propane, and combinations thereof

14. The method of claim 11, wherein the linear alkane groups having one to five carbons are selected from the group consisting of methyl, ethyl, propyl, and isopropyl groups.

15. The method of claim 11, wherein the one or more oxidizing gases is selected from the group consisting of ozone, oxygen, carbon dioxide, carbon monoxide, water, nitrous oxide, 2,3-butanedione, and combinations thereof.

16. The method of claim 11, further comprising treating the low dielectric constant film with an electron beam.

17. A method for depositing a low dielectric constant film, comprising:

delivering a gas mixture comprising:

one or more linear, oxygen-free organosilicon compounds;

one or more oxygen-free hydrocarbon compounds comprising one ring and one or two carbon-carbon double bonds in the ring;

and one or more oxidizing gases to a substrate surface at deposition conditions sufficient to deposit a low dielectric constant film on the substrate surface; and

treating the low dielectric constant film with an electron beam.

18. The method of claim 17, wherein the one or more linear, oxygen-free organosilicon compounds comprises a member selected from the group consisting of methylsilane, dimethylsilane, trimethylsilane, tetramethylsilane, ethylsilane, disilanomethane, bis(methylsilano)methane, 1,2-disilanoethane, 1,2-bis(methylsilano)ethane, 2,2-disilanopropane, diethylsilane, propylsilane, vinylmethylsilane, 1,1,2,2-tetramethyldisilane, hexamethyldisilane, 1,1,2,3,3-

pentamethyltrisilane, 1,3-bis(methylsilano)propane, 1,2-bis(dimethylsilano)ethane, 1,3-bis(dimethylsilano)propane, and combinations thereof.

19. The method of claim 17, wherein the one or more oxygen-free hydrocarbon compounds comprises alpha-terpinene.

20. The method of claim 19, wherein the one or more linear, oxygen-free organosilicon compounds comprises trimethylsilane and the one or more oxidizing gases comprises carbon dioxide and oxygen.